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EXAMINER
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* GEORGE E. BARRINGER, JR., STEPHEN C. PHILLIPS,  
and  
MARK J. PHILLIPS

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Appeal 2010-009253  
Application 10/600,177  
Technology Center 1700

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Before ADRIENE LEPIANE HANLON, CHUNG K. PAK, and  
ROMULO H. DELMENDO, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

George E. Barringer, Jr., *et al.*, the Appellants,<sup>1</sup> seek our review under 35 U.S.C. § 134(a) of a final rejection of claims 27-52.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART and REVERSE-IN-PART.

## STATEMENT OF THE CASE

The invention relates to an apparatus for performing capillary electrophoresis in the analysis of macromolecules, wherein the apparatus includes a particular controller operatively coupled to an input valve for providing a liquid sample to the capillary electrophoresis column. Specification (“Spec.”) 6, l. 25 to 7, l. 3.

Claims 27 and 52 are reproduced below:

27. An apparatus for performing capillary electrophoresis, comprising:

an inlet chamber;

a capillary electrophoresis column with one end fixedly coupled to the inlet chamber;

a liquid source coupled to the inlet chamber through an input valve to supply a liquid sample in a controlled manner to the inlet chamber; and

a controller operatively coupled to the input valve and *including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column.*

52. An apparatus for performing capillary electrophoresis comprising:

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<sup>1</sup> The Appellants state that the real party in interest is Groton Biosystems. Appeal Brief filed November 2, 2009 (“App. Br.”) at 3.

<sup>2</sup> App. Br. 3; Final Office Action mailed January 27, 2009; Examiner’s Answer mailed February 18, 2010 (“Ans.”) at 2.

means for providing a liquid source in fluid communication via an inlet chamber to an end of a capillary electrophoresis column fixedly coupled to the inlet chamber;

means for converting and executing operational input and responsively controlling flow of the liquid source to the inlet chamber to provide a liquid sample in a controlled manner to the end of the capillary electrophoresis column; and

means for performing the capillary electrophoresis.

App. Br. 20, 22 (Claims App'x).

The Examiner rejected claims 27-52 as follows:

- I. Claims 27 and 52 under 35 U.S.C. § 102(b) as anticipated by Virtanen;<sup>3</sup>
- II. Claims 28-34, 36, and 41-46 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov;<sup>4</sup>
- III. Claims 34 and 35 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov and further in view of Li;<sup>5</sup>
- IV. Claim 37 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov and further in view of Sarrine;<sup>6</sup>
- V. Claim 38 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov and further in view of Karger<sup>7</sup> or Särme;<sup>8</sup>
- VI. Claims 39, 40, 49, and 51 under 35 U.S.C. § 103(a) as unpatentable over Virtanen;

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<sup>3</sup> U.S. Patent 6,402,919 B1 issued June 11, 2002.

<sup>4</sup> U.S. Patent 7,060,171 B1 issued June 13, 2006.

<sup>5</sup> U.S. Patent 6,375,819 B1 issued April 23, 2002.

<sup>6</sup> U.S. Patent 5,147,522 issued September 15, 1992.

<sup>7</sup> U.S. Patent 5,348,633 issued September 20, 1994.

<sup>8</sup> U.S. Patent 7,261,801 B2 issued August 28, 2007.

VII. Claims 47 and 48 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Li; and

VIII. Claim 50 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Sarrine.

Ans. 4-30.

The Appellants rely on a Declaration of George F. Barringer, Jr., submitted on June 1, 2009 pursuant to 37 C.F.R. § 1.132. App. Br. 23 (Evid. App'x).

### DISCUSSION

Except for claims 32, 37, 39, and 52, the Appellants have focused their arguments on certain limitations recited in claim 27. Thus, to the extent that the rejections were not argued separately, we presume that the Appellants are relying on the same arguments presented in support of claim 27. Additionally, claims that have not been separately argued stand or fall with the other claims subject to each rejection. 37 C.F.R. § 41.37(c)(1)(vii).

#### *Claim 27*

The Examiner found that Virtanen describes every limitation of claim 27. Ans. 4-5.

The Appellants' sole basis for contending that Virtanen does not anticipate is that the reference does not disclose a controller as recited in claim 27 (i.e., "a controller . . . including executable instructions to convert and execute operational input to control the valve"). App. Br. 10. Specifically, the Appellants argue that "Virtanen, by providing only a single sentence directed to such a controller, leaves unclear exactly which

additional components would be needed or for what specific functionality.”

*Id.* According to the Appellants, “[o]ne may implement a controller that performs standard controlling functions (e.g., for automation) without converting and executing operational input,” such as a “turnkey” implementation. *Id.* The Appellants further contend that Virtanen is non-enabling because “a person of ordinary skill in the art capillary electrophoresis would not be skilled in electronic devices and electronic processing and would not have been enabled, based on Virtanen alone, to design a system to ‘convert and execute operational input.’” *Id.* at 12.

Thus, the dispositive issues arising from these contentions are:

Does Virtanen describe, within the meaning of 35 U.S.C. § 102(b), “a controller operatively coupled to the input valve and including executable instructions to convert and execute operational input to control the valve for providing a sample of the liquid source to the capillary electrophoresis column,” as recited in claim 27?

Did the Appellants demonstrate by clear and convincing evidence that Virtanen’s disclosure is non-enabling with respect to the controller?

We find no error justifying reversal of the Examiner’s finding that Virtanen describes, within the meaning of 35 U.S.C. § 102(b), the invention recited in claim 27. Our reasons follow.

“[T]he PTO must give claims their broadest reasonable construction consistent with the specification . . . . Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.” *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). “[A]s applicants may amend claims to narrow their scope,

a broad construction during prosecution creates no unfairness to the applicant or patentee.” *Id.*

As correctly found by the Examiner at pages 32-33 of the Answer, none of the key terms in the disputed limitation (“controller,” “executable instructions,” and “operational input”) are defined in the Specification. Spec. 6, ll. 1-15. Instead, as explained by the Examiner, Ans. 32, these terms appear in the Specification “in an open[-ended or non-limiting] manner,” as follows:

A controller is employed to control the hydraulic subsystem in a manner adapted for preparing the macromolecule sample. The controller includes executable instructions, ***such as*** compiled software (i.e., software that is unchangeable by the end user), that has instructions to convert and execute operational input to control the hydraulic subsystem. The executable instructions ***may be*** unchangeable and conform to a known industry standard, such as American National Standards Institute (ANSI) (e.g., ANSI ‘C’ programming language).

The operational input ***may include*** instructions, ***such as*** declarative software instructions, that are interpreted by the compiled software. The operational input ***may be*** modifiable independent of the compiled software. In this way, once the system with the compiled software is delivered to a customer, the customer can develop or modify the operational input without altering the compiled software.

The controller ***may include*** an interface to receive the operational input from an external system. Such an external system may be local to the system or coupled to the interface via a network, such as the Internet.

Spec. 6, ll. 1-15 (emphases added).

While the Specification in other passages provides specific examples such as “operational input” in the form of particular declarative software instructions as described on pages 31-32 (i.e., “english-like language”), the

Examiner correctly concluded (Ans. 35) that these examples do not limit the broad scope of these terms. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (“[T]his court counsels the PTO to avoid the temptation to limit broad claim terms solely on the basis of specification passages.”).

Therefore, we conclude from the claim language itself as well as the pertinent Specification disclosure that the disputed limitation reads on any microprocessor-based controller, which converts and executes user input from any interface by any means such as software or firmware to physically control the input valve.

Having construed the disputed claim limitation, we turn to the teachings of Virtanen. The Appellants do not dispute the Examiner’s findings that Virtanen describes an apparatus for performing capillary electrophoresis comprising an inlet chamber, a capillary electrophoresis column with one end fixedly coupled to the inlet chamber, and a liquid source coupled to the inlet chamber through an input valve. App. Br. 8-11; Ans. 4. As pointed out by the Examiner on pages 4-5 of the Answer, Virtanen teaches that the “[o]peration of the *entire* apparatus can be controlled by means of a micro-processor.” Col. 3, ll. 36-38 (emphasis added). Virtanen states that “[b]y using appropriate pumps and valves, it is possible to perform a closed or open capillary electrophoresis or to establish a precalculated flow rate in a capillary.” Col. 3, ll. 38-40. In addition, Virtanen teaches that “[b]y modifying various parameters, type of injection, electric field, and solution flow, it is readily possible with the apparatus of the [Virtanen] invention to introduce many different ways of sample feeding” and that “[b]y using an apparatus of the [Virtanen] invention, it is easy to select and implement initial and boundary conditions for various



electrophoresis applications.” Col. 4, ll. 35-39, 42-44. Thus, a person of ordinary skill in the art would have drawn a reasonable inference from Virtanen’s disclosure that the input valve is also controlled by a microprocessor by input from a user to vary the operational parameters of the apparatus. *In re Preda*, 401 F.2d 825, 826-27 (CCPA 1968).

The Appellants rely on Inventor Barringer’s declaration testimony to assert that “it is improper to conclude that sophisticated intermediate level processing as in Appellant’s claimed invention would be inherent.” App. Br. 11. As we discussed above, the claim language itself encompasses any microprocessor-based controller that permits a user to control the input valve. In testifying that “[t]he present invention as claimed goes far beyond mere control by a microprocessor and also beyond modifiable parameters as in Virtanen,” Inventor Barringer appears to have failed to appreciate the broad scope of claim 27. Barringer Decl. ¶ 11. Also, while Inventor Barringer states that a “turnkey solution” with control and command instructions inaccessible to the user exists commercially, such a “turnkey” device is not Virtanen’s apparatus, which permits user control. *Id.* at ¶¶ 12-13.

In support of the argument that Virtanen’s disclosure with respect to the controller is non-enabling, Inventor Barringer asserts that a chemist would not know how “to implement a sophisticated system like the presently claimed invention.” *Id.* at ¶ 11. Inventor Barringer, however, overlooks the fact that a chemist is presumed to have some common sense. A chemist, who may or may not be well-versed with microprocessors and/or programming, would have had the common sense to consult experts to make and/or use the apparatus disclosed in Virtanen. Because the Appellants

failed to prove by clear and convincing evidence that Virtanen's disclosure is non-enabling, we find their argument unpersuasive.

For these reasons, we find no error in the Examiner's rejection of claim 27.

#### *Claim 52*

The rejection of claim 52 stands on different footing. As the Appellants point out, claim 52 recites means-plus-function language under 35 U.S.C. § 112, ¶ 6 (e.g., "means for converting and executing operational input and responsively controlling flow of the liquid source to the inlet chamber to provide a liquid sample in a controlled manner to the end of the capillary electrophoresis column"). App. Br. 13. Because the Examiner did not carry out a proper claim interpretation of the means-plus-function limitations under 35 U.S.C. § 112, ¶ 6, Ans. 4-5, 31-36, we procedurally reverse the rejection of claim 52.

#### *Claim 39*

With respect to claim 39, the Appellants again rely on the "turnkey-style automation system" argument made in support of claim 27. App. Br. 13. Therefore, we find the Appellants' argument in support of claim 39 similarly unpersuasive.

#### *Claim 32*

Claim 32 recites "wherein the executable instructions convert the operational input by interpreting program instructions." The Examiner relied on the teachings of Nikiforov for this limitation. Ans. 13. The

Appellants argue that “Nikforov [sic, Nikiforov] does not teach converting operational input at all, much less ‘convert[ing] operational input by interpreting program instructions.’” App. Br. 14 (quoting claim 32).

We cannot agree with the Appellants. Nikiforov teaches a microfluidic electrophoresis device in which a computer with appropriate programming receives user input information and transfers the information into instructions for a flow controller. Col. 7, l. 49 to col. 8, l. 13. Thus, Nikiforov makes explicit what would have been reasonably drawn as inferences from Virtanen’s disclosure. As such, we find no error in the Examiner’s conclusion that a person of ordinary skill in the art would have had a reason to implement a computer with appropriate programming in Virtanen in order to receive/process user input and then provide instructions to the controller as shown in Nikiforov.

*Claim 37*

Claim 37 recites “wherein the executable instructions include instructions to detect errors in the operational input.” The Examiner relied on the teachings of Sarrine at column 7, lines 34-37, and column 19, lines 15-37. The Appellants’ only argument is that “Sarrine’s error detection of an input signal is patentably distinct” from that recited in claim 37 because Sarrine’s error detection is of the kind conventionally found in turnkey systems. App. Br. 16.

Again, the Appellants’ argument is unpersuasive. Here, the Examiner has relied on the collective teachings of Virtanen and Sarrine. Virtanen plainly teaches that the user can vary the operating parameters of the apparatus and is therefore more than a “turnkey” operation. Because the

Appellants have not addressed the collective teachings of the prior art references, the Appellants' argument is ineffective to show any error on the part of the Examiner. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

### ORDER

The Examiner's rejection of claims 27 and 52 under 35 U.S.C. § 102(b) as anticipated by Virtanen is affirmed as to claim 27 but reversed as to claim 52.

The Examiner's rejection of claims 28-34, 36, and 41-46 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov is affirmed.

The Examiner's rejection of claims 34 and 35 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov and further in view of Li is affirmed.

The Examiner's rejection of claim 37 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov and further in view of Sarrine is affirmed.

The Examiner's rejection of claim 38 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Nikiforov and further in view of Karger or Särme is affirmed.

The Examiner's rejection of claims 39, 40, 49, and 51 under 35 U.S.C. § 103(a) as unpatentable over Virtanen is affirmed.

The Examiner's rejection of claims 47 and 48 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Li is affirmed.

The Examiner's rejection of claim 50 under 35 U.S.C. § 103(a) as unpatentable over Virtanen in view of Sarrine is affirmed.

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Application 10/600,177

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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